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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>C07K 14/00, 14/705</b>	<b>A3</b>	<b>(11) International Publication Number:</b> <b>WO 00/26243</b> <b>(43) International Publication Date:</b> 11 May 2000 (11.05.00)
<b>(21) International Application Number:</b> PCT/US99/25499 <b>(22) International Filing Date:</b> 29 October 1999 (29.10.99) <b>(30) Priority Data:</b> 60/172,249 29 October 1998 (29.10.98) US <b>(63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Application</b> US 60/172,249 (CIP) Filed on 29 October 1998 (29.10.98) <b>(71) Applicant (for all designated States except US):</b> INCYTE PHARMACEUTICALS, INC. [US/US]; 3174 Porter Drive, Palo Alto, CA 94304 (US). <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> TANG, Y., Tom [CN/US]; 4230 Ranwick Court, San Jose, CA 95033 (US). ARGENTINE, Charles, C. [US/US]; 1849 8th Avenue, Unit B, Alameda, CA 94510 (US). CORLEY, Neil, C. [US/US]; 1240 Dale Avenue, #30, Mountain View, CA 94040 (US). GORGONE, Gina, A. [US/US]; 1253 Pinecrest Drive, Boulder Creek, CA 94132 (US). GUEGLER, Karl, J. [CH/US]; 1048 Oakland Avenue, Menlo Park, CA 94025 (US).		<b>BAUGHN, Mariah, R. [US/US];</b> 14244 Santiago Road, San Leandro, CA 94577 (US). <b>(74) Agents:</b> BILLINGS, Lucy, J. et al.; Incyte Pharmaceuticals, Inc., 3174 Porter Drive, Palo Alto, CA 94304 (US). <b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). <b>Published</b> <i>With international search report.</i> <b>(88) Date of publication of the international search report:</b> 5 October 2000 (05.10.00)
<b>(54) Title:</b> TRANSMEMBRANE 4 PROTEINS		
<b>(57) Abstract</b> <p>The invention provides human transmembrane 4 proteins (TM4P) and polynucleotides which identify and encode TM4P. The invention also provides expression vectors, host cells, antibodies, agonists, and antagonists. The invention also provides methods for diagnosing, treating, or preventing disorders associated with expression of TM4P.</p>		

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/25499

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC 7 C07K14/00 C07K14/705		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) IPC 7 C07K		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	YUASA T. ET AL.: "Expression of uroplakin Ib and uroplakin III genes in tissues and peripheral blood of patients with transitional cell carcinoma" JAPANESE JOURNAL OF CANCER RESEARCH, vol. 89, September 1998 (1998-09), pages 879-882, XP000882554 abstract page 879, column 1, line 1 -page 881, column 1, paragraph 1; figure 1 --- -/--	1-16,19
<div style="display: flex; justify-content: space-between;"> <span><input checked="" type="checkbox"/> Further documents are listed in the continuation of box C.</span> <span><input checked="" type="checkbox"/> Patent family members are listed in annex.</span> </div>		
* Special categories of cited documents :		
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>*A* document defining the general state of the art which is not considered to be of particular relevance</p> <p>*E* earlier document but published on or after the international filing date</p> <p>*L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>*O* document referring to an oral disclosure, use, exhibition or other means</p> <p>*P* document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>*Z* document member of the same patent family</p> </div> </div>		
Date of the actual completion of the international search  <div style="text-align: center; font-size: 1.2em;">6 April 2000</div>		Date of mailing of the international search report  <div style="text-align: center; font-size: 1.2em;">07.07.00</div>
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer  <div style="text-align: center; font-size: 1.2em;">Muller-Thomalla, K</div>

## INTERNATIONAL SEARCH REPORT

International Application No

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE EMBL SEQUENCE DATABASE [Online]  EMBL, Heidelberg  Accession number: P30413,  1 April 1993 (1993-04-01)  KALLIN ET AL.: "Cloning of a growth  arrest-specific and transforming growth  factor beta-regulated gene, TI 1, from an  epithelial cell line"  XP002134989  abstract</p> <p>---</p>	1-16,19
X	<p>DATABASE EMBL SEQUENCE DATABASE [Online]  EMBL, Heidelberg  Accession number: P38573,  1 October 1994 (1994-10-01)  YU ET AL.: "Uroplakins Ia and Ib, two  major differentiation products of bladder  epithelium, belong to a family of four  transmembrane domain (4TM) proteins"  XP002134990  abstract</p> <p>---</p>	1-16,19
A	<p>WRIGHT M D ET AL: "The ins and outs of  the transmembrane 4 superfamily"  IMMUNOLOGY TODAY, GB, ELSEVIER PUBLICATIONS,  CAMBRIDGE,  vol. 15, no. 12,  1 January 1994 (1994-01-01), pages  588-594, XP002066879  ISSN: 0167-5699  the whole document</p> <p>---</p>	1-16,19
P,X	<p>WO 99 00408 A (INCYTE PHARMA INC ;CORLEY  NEIL C (US); SHAH PURVI (US); HILLMAN JE)  7 January 1999 (1999-01-07)  the whole document</p> <p>-----</p>	1-16,19

# INTERNATIONAL SEARCH REPORT

I. national application No.  
PCT/US 99/25499

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:  
Although claim 19 is directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☒ Claims Nos.: 17,18,20  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  
1 (partly) - 16 (partly) and 19 (partly)

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 17,18,20

Present claims 17,18 and 20 relate to a compound and method using the same defined by reference to a desirable characteristic or property, namely an agonist or antagonist effect with respect to the polypeptide of claim 1.

The claims cover all compounds having this characteristic or property, whereas the application provides support within the meaning of Article 6 PCT and/or disclosure within the meaning of Article 5 PCT for only a very limited number of such products. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Independent of the above reasoning, the claims also lack clarity (Article 6 PCT). An attempt is made to define the compound by reference to a result to be achieved. Again, this lack of clarity in the present case is such as to render a meaningful search over the whole of the claimed scope impossible. Consequently, the search has not been carried out for those claims.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

## FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

## 1. Claims: 1(partly)-16(partly) and 19(partly)

A purified polypeptide comprising an amino acid sequence as shown in sequence No: 1 and the corresponding encoding polynucleotide comprising an nucleic acid sequence as shown in sequence No:3. Expression vectors comprising the polynucleotide and host cell comprising the expression vector as well as methods for detecting the polynucleotide. Polynucleotide which hybridizes or is complementary to the encoding polynucleotide as shown in sequence No: 3. Method for producing the polypeptide and an antibody which specifically binds to the latter. A pharmaceutical composition comprising the polypeptide and method of treatment using the same.

## 2. Claims: 1(partly)-16(partly) and 19(partly)

A purified polypeptide comprising an amino acid sequence as shown in sequence No: 2 and the corresponding encoding polynucleotide comprising an nucleic acid sequence as shown in sequence No:4. Expression vectors comprising the polynucleotide and host cell comprising the expression vector as well as methods for detecting the polynucleotide. Polynucleotide which hybridizes or is complementary to the encoding polynucleotide as shown in sequence No: 4. Method for producing the polypeptide and an antibody which specifically binds to the latter. A pharmaceutical composition comprising the polypeptide and method of treatment using the same.

...formation on patent family members

PCT/US 99/25499

Form PCT/ISA/210 (patent family annex) (July 1992)